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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/783,143

02/19/2004

Stephan Lutgen

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EXAMINER

NGUYEN, TUAN N

ART UNIT

PAPER NUMBER

2828

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/783,143	Applicant(s) LUTGEN ET AL.	
	Examiner Tuan N. Nguyen	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In respond to applicant's RCE amendment filed 11/27/2006, claims 1, 23 and 24 have been amended. Claim 3 has been canceled. Claims 1,2, 4-24 are pending.

2. Applicant's arguments with respect to claims 1, 2, 4-24 have been considered but are moot in view of old ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of 35 U.S.C. 102(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-12, 15, 19-20, 23-24 are rejected under 35 U.S.C. 102(a) as being unpatentable over Paschotta (WO 01/59895)

With respect to claim 1 Paschotta (WO 01/59895) discloses a laser device for generating laser pulses (*Fig 1: 21, 1, 10 semiconductor device generating laser pulses 10, 10'*; *Fig 7: 2 with an optically pumped semiconductor laser (Fig 1,7: 7) (Page 12: 5-15 diode pumping laser)*, comprising:

a semiconductor laser having an active layer (*Fig 1: 3 Multi Quantum Well/ gain layer*)(*ABSTRACT: Band-gap engineering can be used ... even integrate gain ... within the same wafer*);

a first pump radiation source which is monolithically integrated into the semiconductor laser (*It is inherent and known in the art that semiconductor laser device gain/active/quantum well layer are driven via the electrodes integrate into the semiconductor cause semiconductor to lase*);

an external resonator (*Fig 7, 8: 12 external resonator*)(*Page 11: 10-24 first reflective and second reflective element 11, 12, "active mirror element"*),

and at least one mode-locker (*Fig 1,7: 5*)(*Page 11: 15-20 SESAM semiconductor saturable absorber mirror*)(*Title: Passively mode-lock optically pumped semiconductor external-cavity laser*) (*Page 3: 10-20, passive mode locking technique relies on saturable absorber mechanism*),

wherein the active layer is optically pumped by the monolithically integrated first pump radiation source (*Page 11: 15-22*)(*Fig 1: 3 quantum well/active layer the first pump source monolithically integrated into the semiconductor laser*)(*ABSTRACT*).

With respect to claim 2, (*Fig 1, 7: 7*) shows wherein the semiconductor laser is optically pumped by means of a pump radiation source arranged *externally* (*Fig 1,7: pump radiation source 70 into the semiconductor surface 21*).

With respect to claims 4, 5,6 Paschotta (WO 01/59895) discloses and shows and at least one mode-locker that is passive mode-locker and is a saturable absorber (*Fig 1,7: 5*)(*Page 11: 15-20 SESAM semiconductor saturable absorber mirror*)(*Title: Passively mode-lock optically pumped semiconductor external-cavity laser*) (*Page 3: 10-20, passive mode locking technique relies on saturable absorber mechanism*),

With respect to claim 7 Paschotta (WO 01/59895) discloses the mode-locker is monolithically integrated into the semiconductor laser (*Page 11: 19-22 the bragg reflector part of the semiconductor made of semiconductor and locking a desired wavelengths*) (*Page 5: 5-10 passively mode -locked incorporated into the semiconductor structure; page 7: 5-10 – passive mode-locked based on ion-doped crystal ; Page 13*).

With respect to claim 8, Paschotta (WO 01/59895) discloses the mode-locker (10) is combined with a resonator mirror (9) (*Page 13: 22-26: SESAM 5 consists of Bragg mirrors*) (*Page 17: Table 1 “Resonant structure 5- Low/Hi index made of AlAs & AlGaAs*).

With respect to claims 9, 10 Paschotta (WO 01/59895) discloses wherein the resonator has a device for phase compensation, and arranged downstream of the resonator (*Page 3: 10-20- passive mode locking use to stabilize short pulse*)(*Page 9: 1-3 – where suitable spectral filter in laser cavity or placing saturable absorber at a place in the cavity, for phase of wavelength compensation*).

With respect to claims 11, 12 Paschotta (WO 01/59895) discloses the use of the optical fiber in the phase compensation (*Page 12: 7-8 light deliver through optic fiber*), and the folding mirror (*Col 12: 18 the folding mirror 8*).

With respect to claim 15 Paschotta (WO 01/59895) discloses the laser pulses have a pulse duration which is less than 100 ps (*Page 12: 23 pulse of 26ps*)(*Page 14: 19 – 25.7ps*)

With respect to claims 19, 20 Paschotta (WO 01/59895) shows the mode-locker is arranged in said external resonator, or arranged internally and part is arranged externally of the semiconductor laser. (*Fig 1: 5, 12, 8, 4*)(*Fig 7: 4,5,12*) (*Fig 8,9: 12,5, mode locker and resonator mirror, Bragg, and output lens/resonator*).

With respect to claim 23 Paschotta (WO 01/59895) discloses a laser device for generating laser pulses (*Fig 1: 21, 1, 10 semiconductor device generating laser pulses 10, 10'*; *Fig 7: 2*) with an optically pumped semiconductor laser (*Fig 1,7: 7*) (*Page 12: 5-15 diode pumping laser*), comprising:

an external resonator (*Fig 7, 8: 12 external resonator*)(*Page 11: 10-24 first reflective and second reflective element 11, 12, "active mirror element"*),

and at least one mode-locker (*Fig 1,7: 5*)(*Page 11: 15-20 SESAM semiconductor saturable absorber mirror*)(*Title: Passively mode-lock optically pumped semiconductor external-cavity laser*) (*Page 3: 10-20, passive mode locking technique relies on saturable absorber mechanism*),

wherein the resonator has a phase compensation element, said phase compensation element compensating for group velocity dispersion(*ABSTRACT*)(*Page 11: 15-22 phase compensation saturable absorber mirror SESAM 5 and/or Bragg reflector compensating for velocity dispersion*).

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With respect to claim 24 Paschotta (WO 01/59895) discloses the phase element compensation is integrated into the semiconductor laser (*Page 11: 19-22 the bragg reflector part of the semiconductor made of semiconductor and locking a desired wavelengths*) (*Page 5: 5-10 passively mode-locked incorporated into the semiconductor structure; page 7: 5-10 – passive mode-locked based on ion-doped crystal ; Page 13*).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or non-obviousness.
6. Claims 13, 14, 16, 18, 21-22 are rejected under 35 U.S.C. 102(a) as being unpatentable over Paschotta (WO 01/59895).

With respect to claims 13,14 (Fig 1, 7) shows the resonator has a first resonator branch for generating laser pulses having a wavelength, and a second resonator branch for generating laser pulses having a second wavelength (*Fig 1: 1st wavelength input 70, 1st lasing pulse from*

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semiconductor 10, 2nd wavelength after enter and exit SESAM absorber mirror 12, 5), and the pulses are coupled to one another in a phase-locked manner (Fig 7: 10, 12 mode-lock to output coupler mirror).

With respect to claims 16-18, the claims further require that the laser is a laser oscillator, amplifier, or CPA amplifier. Paschotta did not discretely disclose the laser type, however it has been held to be within one skill in the art to select known part for its suitability for the intended use involves only routine skill in the art, in this case the type of laser use would have been obvious as this would not have changed the structure and operation of optical pump laser device with mode locker.

With respect to claims 21, 22, the claims further require that the laser pulse duration is less than 20ps and 1ps. Paschotta (WO 01/59895) discloses the laser pulses have a pulse duration around 19-25.7ps (*Page 12: 23 pulse of 26ps*)(*Page 14: 19 – 25.7ps*). It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum ranges involves only routine skill in the art.

Response to Argument

7. Applicant's arguments filed on 11/27/2006 have been fully considered but they are not persuasive.

Page 8, Applicant pointed out “during a telephone conference on November 8, 2006, Examiner acknowledged Paschotta does not have a monolithically integrated first pump radiation source ... and tentatively agreed that claim 1 of present application would not be

anticipated by Paschotta and would be allowable if amended to positively recite an active layer as a feature different from a monolithically integrated first pump radiation source”; the Examiner wants stand correction to the above statement. The examiner tentatively agreed with the Applicant that only when limitation of the structural and functional details of the invention “at the time of telephone conversation – what make up the pump source, where the active layer position in relation to other elements in the semiconductor, and how/where the integrate source pumping the active layer ... ” written in the claim, would overcome 102 rejection and would subject to further search. Current, amended RCE still anticipated by Paschotta. Chilla 2003/0012247 Fig 7 also shows and discloses a monolithic pump source and an external optical pump source.

Page 9-10, Applicant pointed out the new amended language in claim 23 to recite “wherein the resonator has a phase compensation element, said phase compensation element compensating for group velocity dispersion” where the expression “group velocity – refers to the speed at the centroid of a wave packet moves in a medium ... different propagation times for different components are a result of refractive index depending on frequency, e.g. in a prism or a grating”. It is within one skill in the art to recognize, the beam wavelength travel as a package and has a centroid/center. **It is not proper to read limitations appearing in the specification into the claim when these structural/functional limitations are not recited in the claim(s).** The examiner read the claims given their broadest reasonable interpretation consistent with the specification, Paschotta reference still able to read on the claims.

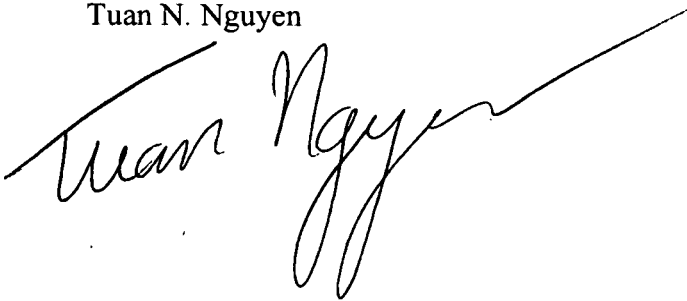
Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan N. Nguyen

A handwritten signature in black ink, appearing to read 'Tuan Nguyen', with a long, sweeping horizontal stroke extending to the right.A handwritten signature in black ink, appearing to read 'Minsun Oh', with a long, sweeping horizontal stroke extending to the right.
**MINSUN OH HARVEY
PRIMARY EXAMINER**